

An Inaugural Dissertation
on
Inflammation
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by

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Inflammation consists in the engorgement of the vessels, and in increase in the amount of blood, acceleration of the heart's action, with tendency to effusion. The phenomena attendant upon inflammation are redness, heat, swelling, and pain.

In the first place, in speaking of the most superficial symptoms, we should observe that the redness is not produced by any constituent or elementary heat of the blood, gaining access to the distended capillaries in undue proportion, as the older writers supposed, the comparison originally made by Boyer, between the contents of small vessels, and capillary tubes of glass, illustrates the point very clearly.

The blackest fluid will look

pale and even transparent, when contained in very fine glass tubes, whereas, the natural color will reappear on admitting the same fluid into a vessel of larger bore.

There is no necessity, therefore, for supposing that the pale and uninflamed capillaries, naturally, contain the watery parts of the blood alone, while in an engorged or inflamed state, they admit a larger series of red globules.

Nor is there any reason for concluding, at least until the final stage has been developed, that the intense redness of an inflamed surface is owing to an effusion of the coloring matter into the cellular tissue. Inflamed parts are

red, because larger columns of the homogeneous circulating fluids are passing through the minute vessels. This redness will of course be qualified in different cases, by the degree of activity of the powers both of respiration and circulation. If the arterialization of the blood in general is defective in any individual, the redness of an inflamed surface will be dull or dusky or even inclined to lividity. There is also another cause of the diversity of color alluded to by some authors. If the muscular dilatation is chiefly located in the capillary commencement of the veins, instead of the terminations of the arteries, the same dulness of color will be observed. In either case

however, the want of floridity in color indicates a deficiency in the activity of the circulating power, and in a corresponding degree, modifies the character of the disease. When the color is yellowish as well as florid, there is an indication of accompanying bilious derangement. The tonsil is pale red, or pinkish in the fibrous tissues, and dark or dull in the mucous membranes, corresponding to the degree of dilatibility in their respective vessels. The redness is circumscribed, although gradually lost in healthy inflammations, irregularly diffused with determined edges, in erysipal tous ones, and linear or streaked in lymphatic inflammations of the superficial parts.

The increased temperature of an inflamed part is the circumstance which must have attracted the chief attention of the first observers, as it gave origin to the term inflammation, the redness also being the natural accompaniment of combustion, no doubt contributed to the idea on which the name has been bestowed. It is believed by modern pathologists that the heat evolved during inflammation is not so great as it was formerly supposed to be, although there is still a great difference of opinion in this respect, some contending that the heat of an inflamed part never exceeds that of the heat of the body, and others that it does.

The increase of temperature may depend upon two causes, first, the dilatation of the capillaries causing an increase of circulation through the part, and secondly upon an increased excitement.

Pain is one of the most important symptoms of inflammation, and by some pathologists is considered the most difficult to explain. It is ascribed by some to mechanical causes, such as the distention of the vessels, the pressure of the tumor, or tension from the pressure of puss and no doubt all these circumstances tend to aggravate the pain but it is not likely they produce it, for the same degree of pressure or tension would not cause pain in a

part not inflamed. We might be led to suppose that the nerves in an inflamed part acquired their sensibility from the increased quantity of red blood circulating through the part, since it is observed that sensation is much influenced by the quantity of blood which may be either naturally, ^{or} accidentally sent to an organ, in all parts of the body also where there is much sensibility there is a copious supply of red blood, as the skin and mucous membranes are the two surfaces which receive a large quantity of arterial blood and in proportion as this natural quantity is increased or diminished, the sensibility of the surface is augmented or lessened, and when

deprived of red blood as when the finger becomes shriveled from cold and damp, the sensibility of the skin may be quite extinguished. But although it may be admitted, that the natural sensibility of a part is in a great measure dependent upon the state of the circulation in the capillaries, still the varieties of pain felt in the different tissues when inflamed cannot be explained upon that principle. These are in a great degree influenced by the character of the inflammation and of the structure of the part inflamed.

I think it is reasonable to suppose that the nervous filaments themselves are

affected, or deranged in what manner it is impossible to say, independently of pressure although there is no doubt that pressure has a great influence upon the pain, as it can be easily ascertained by placing an inflamed part in a depending position, so as to increase it by an accumulation of blood in the part, and the pain will be instantly augmented; whereas, if it be again elevated the pain is immediately relieved.

The swelling of an inflamed part varies according to the cause which gave rise to it. A slight tumefaction is the

consequence of the dilatation
of the capillaries and the
circulation of more blood
to the part than natural
and this kind of swelling is
increased by placing the
part in a depending position.
There are various theories given
by different authors to account
for the swelling of a part when
in an abnormal condition, but
perhaps no one theory will
account for all cases, as the
swelling is no doubt influenced
by the character, habits, and
general condition of the system
of the individual.